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09/891,309	06/27/2001	Peter D'Antonio	D'ANTONIO-15	1645

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EXAMINER

MCCLOUD, RENATA D

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/891,309

Applicant(s)

D'ANTONIO ET AL.

Examiner

Renata McCloud

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 13-16 and 19-24 is/are rejected.
- 7) ☒ Claim(s) 9-12, 17, 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 7, 15, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by D'Antonio et al (U.S. Patent 4,964,486).

D'Antonio et al teach:

Claim 1: a sound diffuser with low frequency sound absorption (e.g. Fig. 1) having a front surface configured to diffuse sound waves (e.g. Fig. 1:15) and means for receiving sound waves below a desired cut-off frequency (e.g. Fig. 18:100).

Claim 2: a plurality of divided or non-divided parallel wells (e.g. Fig. 7:51).

Claim 3: the front surface having a geometrical or irregular shaped pattern (e.g. Fig. 1:surface has a geometrical shape).

Claim 4: the shapes separated by slots or holes (e.g. Fig. 2:15).

Claim 5: receiving means between the slots or holes (e.g. Fig. 7:65; Fig. 18:15 in 103,106,110,113).

Claim 7: the receiving means having a plurality of open slots (e.g. Fig. 2,3:15 comprises slots 27,33 or Fig. 18:100 is a slot).

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Claim 15: the slots providing low frequency absorption (e.g. Column 5, Lines 5-10).

Claim 16: the slots narrow enough to provide low frequency absorption (e.g. Column 4, Lines 66-67).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Antonio et al as applied to claim 1 above, in view of McGrath (U.S. Patent 6,015,026).

Claims 6: D'Antonio et al teach the limitations of claim 1. Referring to claim 6, D'Antonio et al do not teach the front surface comprised of a compound curved shaped. McGrath teaches a front surface comprised of a compound curved shaped (e.g. Figure 1, Item 12).

Claim 19: D'Antonio et al teach the limitations of claim 1. Referring to claim 19, D'Antonio et al do not teach a crossover frequency below which sound is absorbed and above which diffusion takes place. McGrath teaches a crossover frequency below which sound is absorbed and above which diffusion takes place (e.g. Figure 24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the D'Antonio et al's diffuser to include the teachings of McGrath. The advantage of this would be a cost efficient, easy to install acoustic diffuser that absorbs a wide range of low frequencies, and is reflective over a range of mid-range frequencies.

5. Claims 8, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Antonio et al as applied to claim 1 above, in view of Fries (U.S. Patent 5,422,446).

Claim 8: D'Antonio et al teach the limitations of claim 1. Referring to claim 8, D'Antonio et al do not teach the receiving means having a plurality of holes. Fries teaches the receiving means having a plurality of holes (e.g. Figure 1, Item 9).

Claim 13: D'Antonio et al teach the limitations of claim 1. Referring to claim 13, D'Antonio et al do not teach an absorptive material over the rear of the body. Fries teaches an absorptive material over the rear of the body (e.g. Figure 2, Item 7).

Claim 14: D'Antonio et al teach the limitations of claim 1. Referring to claim 14, D'Antonio et al do not teach the absorptive material made of a porous material. Fries teaches the absorptive material made of a porous material (e.g. Column 3, Line 66).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the D'Antonio et al's diffuser to include the teachings of Fries. The advantage of this would be an acoustic diffuser that guides sound through its holes and has control over sound waves passing through.

6. Claims 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGrath in view of Patrick (U.S. Patent 5,892,187).

Claim 20: McGrath teaches a method of making an acoustical device by choosing a desired crossover frequency (e.g. Figure 24), designing a diffusive surface shape of the diffuser to create diffusions above the crossover frequency (e.g. Fig. 24), and installing the device (e.g. Col. 4:66-5:3). McGrath does not teach calculating a number of perforations formed in a diffuser and their respective areas by using a standard acoustic formula where f is the peak absorptive frequency, c is the speed of sound, S is the cross-sectional area of a hole, L is the depth of a perforated sheet, and V is an enclosed volume and forming perforations of desired dimensions through a front surface of the diffuser.

Patrick teaches calculating a number of perforations formed in a diffuser and their respective areas by using a standard acoustic formula where f is the peak absorptive frequency, c is the speed of sound, S is the cross-sectional area of a hole, L is the depth of a perforated sheet, and V is an enclosed volume (e.g. Col. 5: equation 1, equation 2), forming perforations of desired dimensions through a front surface of the diffuser (e.g. Fig. 1:18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus taught by McGrath to include the teaching of Patrick. The advantage of this would be precise desired sound absorption in an acoustic diffuser.

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Claim 24: McGrath and Patrick teach the limitations of claim 20. Referring to claim 24, McGrath teaches a front surface comprised of a compound curved shaped (e.g. Figure 1, Item 12).

7. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGrath and Patrick as applied to claim 20 above, in view of D'Antonio et al (U.S. Patent 4,964,486).

Claim 21: McGrath and Patrick teach the limitations of claim 20. Referring to claim 21, they do not teach a plurality of divided or non-divided parallel wells. D'Antonio teaches a plurality of divided or non-divided parallel wells (e.g. Fig. 1)

Claim 22: McGrath and Patrick teach the limitations of claim 20. Referring to claim 22, they do not teach the front surface having a geometrical or irregular shaped pattern. D'Antonio et al teaches the front surface having a geometrical or irregular shaped pattern (e.g. Fig. 1:surface has a geometrical shape).

Claim 23: McGrath, Patrick, and D'Antonio et al teach the limitations of claim 22. Referring to claim 23, D'Antonio et al teach the shapes separated by slots or holes (e.g. Fig. 2:15).

Allowable Subject Matter

8. Claims 9-12, 17, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of

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reasons for the indication of allowable subject matter: The prior art made of record fails to teach a diffuser with a first set of large holes and a second set of small holes and with slots having a width of 0.1 to 1 mm.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Huszty et al (U.S. Patent 3,862,366) teach a sound radiation system with a row of large holes and a row of small holes.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (703)

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308-1763. The examiner can normally be reached on Mon.-Thurs and every other Fri.
from 8 am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on (703) 308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Renata McCloud
Examiner
Art Unit 2837

RDM
May 29, 2003


ROBERT E. NAPPI
SUPERVISORY PATENT EXAMINER
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